

REMARKS

Claims 1-31 remain pending in the application. Reconsideration is respectfully requested in light of the following remarks.

Section 103(a) Rejection:

The Office Action rejected claims 1-31 under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art (hereinafter "AAPA") and MacLaren et al. (U.S. Publication 2002/0016942) (hereinafter "MacLaren") in view of Katz et al. (U.S. Patent 5,195,100) (hereinafter "Katz"). Applicants respectfully traverse.

The cited art does not teach or suggest a storage array controller that is configured initiate an extent scrubbing operation for a data range, wherein the extent scrubbing operation comprises reading the data from the data range, calculating an extent checksum for the data read from the data range, and comparing the extent checksum to a preexisting extent checksum for the data range; wherein if the extent checksum differs from the preexisting extent checksum, the storage array controller is further configured to initiate one or more unit scrubbing operations, wherein each unit scrubbing operation comprises calculating a new unit checksum for a unit of data, wherein the unit of data is comprised within the data range, and comparing the new unit checksum to an existing unit checksum for the unit of data.

The Examiner states that AAPA discloses controlling/scrubbing means. The Examiner is incorrect. There is no discussion of any type of scrubbing means in AAPA, much less one capable of performing both extent and unit level scrubbing operations. Furthermore, neither MacLaren nor Katz describes scrubbing means capable of performing both extent and unit level scrubbing operations, and the relationship therebetween. The portions of MacLaren cited by the Examiner demonstrate that MacLaren's scrubbing operations are performed solely on one level. The portions of Katz cited by the Examiner have nothing to do with any type of scrubbing means capable

of performing both extent and unit level scrubbing operations, and the relationship therebetween, as recited in Applicants' claims.

MacLaren, at paragraph 54, teaches "error detection via peripheral READ commands and READ commands implemented by the verify logic... However, at this point the data residing in the memory sub-system 40 may still be corrupted. To rectify this problem, the data in the memory sub-system 40 may be over-written or "scrubbed". For every data word...flagged by the memory control devices...a request is sent to the scrubbing control logic 74". MacLaren does not teach scrubbing means capable of performing both extent and unit level scrubbing operations, and the relationship therebetween, as recited in Applicants' claims. More specifically, in regard to claim 1, MacLaren neither teaches nor suggests a storage array controller that is configured initiate an extent scrubbing operation for a data range, wherein the extent scrubbing operation comprises reading the data from the data range, calculating an extent checksum for the data read from the data range, and comparing the extent checksum to a preexisting extent checksum for the data range; wherein if the extent checksum differs from the preexisting extent checksum, the storage array controller is further configured to initiate one or more unit scrubbing operations, wherein each unit scrubbing operation comprises calculating a new unit checksum for a unit of data, wherein the unit of data is comprised within the data range, and comparing the new unit checksum to an existing unit checksum for the unit of data.

Katz teaches a RAID controller, which upon initialization "scans each write in progress journal stored within nonvolatile memory" to determine whether any write operation was interrupted when power was lost. If a journal has not been erased, the controller "causes data blocks from those sectors to be read from disks 307 to the RAID buffers 407 and then compares the time stamps from each data block with the expected value as read from nonvolatile memory 413" to determine whether data corruption occurred. Katz neither teaches nor suggests a storage array controller configured to, initiate extent and unit scrubbing operations to determine whether data corruption has

occurred in a segment of storage through the generation of hierarchical checksums, as presented in claim 1.

Neither Admitted Prior Art, nor MacLaren nor Katz taken either singly or in combination teaches or suggests a storage system as described in claim 1. Therefore, the Applicants assert that claim 1 is patentably distinguishable over the cited prior art.

Applicants assert that independent claim 21 is patentably distinguishable over the cited prior art for reasons similar to those given above with regard to claim 1.

The Examiner seems to be ignoring specific limitations of the independent claims. Applicants remind the Examiner that "All words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. 2143.03 *citing In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). For a rejection to be proper, the Examiner should perform a clause-by-clause comparison between the claims and the cited art. The Examiner has failed to make any such showing in this Action. Applicant's remind the Examiner that he has the burden of proof which requires him to produce the factual basis for his rejection. *In re Warner*, 154 USPQ 173, 177 (C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968). The Examiner has clearly not made a proper comparison between the limitations of the independent claims and the prior art. Applicants also remind the Examiner that 37 CFR 1.104(c)(2) requires that the Examiner designate the *particular* part of each reference relied upon as nearly as practicable and clearly explain the pertinence of each reference.

Furthermore, Applicants specifically traverse the rejection of each of the dependent claims. Applicants assert that the combination of features recited in each of the dependent claims is not taught or suggested by the cited art. The Examiner made no attempt to show how each specific combination of features recited in each dependent claim is taught or suggested by the cited art. Applicants remind the Examiner that the statute clearly places a burden of proof on the Examiner to show why each claim is anticipated or rendered obvious by the prior art. *In re Warner*, 154 USPQ 173, 177

(C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968). **The rejection of each dependent claim is improper since the Examiner has not demonstrated how the specific combination of features recited in each dependent claim is taught or suggested by the cited art.** Applicants further assert that a careful review of APA, MacLaren and Katz does not reveal any teachings that would anticipate or rendered obvious any of Applicants' dependent claims.

CONCLUSION

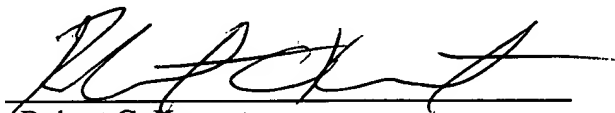
Applicants submit the application is in condition for allowance, and notice to that effect is respectfully requested.

If any extension of time (under 37 C.F.R. § 1.136) is necessary to prevent the above referenced application from becoming abandoned, Applicants hereby petition for such extension. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5181-83701/RCK.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☐ Petition for Extension of Time
- ☐ Notice of Change of Address
- ☐ Fee Authorization Form authorizing a deposit account debit in the amount of \$
for fees ().
- ☐ Other:

Respectfully submitted,



Robert C. Kowert
Reg. No. 39,255
ATTORNEY FOR APPLICANT(S)

Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C.
P.O. Box 398
Austin, TX 78767-0398
Phone: (512) 853-8850

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